

## CLAIMS

1. An audio-information encoding apparatus for dividing an audio signal on a time axis into blocks for every predetermined time period, frequency transforming and encoding each block, said apparatus comprising:
  - white-noise analyzing means that analyzes a white-noise component contained in the audio signal;
  - white-noise encoding means that encodes an index indicating the energy level of the white-noise component analyzed by the white-noise analyzing means.
2. The audio-information encoding apparatus according to claim 1, wherein the white-noise analyzing means analyzes the white-noise component on the basis of the energy distribution at the high-band part of the block.
3. The audio-information encoding apparatus according to claim 1, wherein the white-noise analyzing means analyzes the white-noise component on the basis of the energy distribution of the entire block.
4. The audio-information encoding apparatus according to claim 1, wherein white-noise encoding means further encodes an index of a random-number table that is used to generate a white-noise component in a decoding side.
5. The audio-information encoding apparatus according to claim 1, further comprising gain-control means that controls the gain of the audio signal on the time axis.

6. An audio-information encoding method for dividing an audio signal on a time axis into blocks for every predetermined time period, frequency transforming and encoding each block, the method comprising:

a white-noise analyzing step of analyzing a white-noise component contained in the audio signal;

a white-noise encoding step of encoding an index indicating the energy level of the white-noise component analyzed in the white-noise analyzing step.

7. The audio-information encoding method according to claim 6, wherein an index of a random-number table that is used to generate a white-noise component in a decoding side is further encoded in the white-noise encoding step.

8. A program that causes a computer to perform an audio-information encoding process of dividing an audio signal on a time axis into blocks for every predetermined time period, frequency transforming and encoding each block, the program having:

a white-noise analyzing step of analyzing a white-noise component contained in the audio signal;

a white-noise encoding step of encoding an index indicating the energy level of the white-noise component analyzed in the white-noise analyzing step.

9. The program according to claim 8, wherein an index of a random-number table that is used to generate a white-noise component in a decoding side is further encoded in the white-noise encoding step.

10. A recording medium storing a code train generated by dividing an audio

signal on a time axis into blocks for every predetermined time period, frequency transforming and encoding each block, and by analyzing a white-noise component contained in the audio signal, and by encoding an index indicating the energy level of the white-noise component.

11. The recording medium according to claim 10, wherein the code train contains the encoded indices of a random-number table that is used to generate a white-noise component in a decoding side.

12. An audio-information decoding apparatus for decoding an encoded frequency signal, inverse frequency transforming the decoded frequency signal, thereby generating an audio signal on a time axis, said apparatus comprising:

white-noise generating means that generates a white-noise component on the time axis, on the basis of an encoded index indicating the energy level of the white-noise component; and

adding means that adds the audio signal generated on the time axis by means of the inverse frequency transformation and the white-noise component on the time axis.

13. The audio-information decoding apparatus according to claim 12, wherein the white-noise generating means generates the white-noise component on the basis of the encoded indices of a random-number table.

14. The audio-information decoding apparatus according to claim 12, wherein the white-noise generating means generates the white-noise component on the basis of a

specific value contained in a code train.

15. The audio-information decoding apparatus according to claim 14, wherein the specific value is normalization information or quantization precision information.

16. The audio-information decoding apparatus according to claim 12, which further comprising gain compensating means that compensates for the gain of the audio signal obtained, on the time axis, by means of the inverse frequency transformation, wherein the adding means adds the audio signal on the time axis, thus gain-compensated, and the white-noise component on the time axis.

17. An audio-information decoding method for decoding an encoded frequency signal, inverse frequency transforming the decoded frequency signal, thereby generating an audio signal on a time axis, said method comprising:

a white-noise generating step of generating a white-noise component on the time axis, on the basis of an encoded index indicating the energy level of the white-noise component; and

an adding step of adding the audio signal generated on the time axis by means of the inverse frequency transformation and the white-noise component on the time axis.

18. A program that causes a computer to perform an audio-information decoding process of decoding an encoded frequency signal, inverse frequency transforming the decoded frequency signal, thereby generating an audio signal on a time axis, said program having:

a white-noise generating step of generating a white-noise component on the time axis, on the basis of an encoded index indicating the energy level of the white-noise component; and

an adding step of adding the audio signal generated on the time axis by means of the inverse frequency transformation and the white-noise component on the time axis.